Claims

1. A method including steps for collecting aggregate information about network traffic while maintaining processor load relatively constant despite substantial variation in network traffic.

2. A system including

means for collecting aggregate information about network traffic; and

means for maintaining processor load relatively constant for said means for collecting despite substantial variation in network traffic.

3. A system, including

an input port for receiving network packets;

a sampling element for selecting a fraction of those packets for review, said sampling element including a feedback element for adaptively altering said fraction;

a queue of selected packets;

a packet-type detector coupled to said queue; and

a frequency measurement element coupled to said packet-type detector.

4. A system as in claim 3, wherein said feedback element is responsive to a length of said queue.

1   5.   A system as in claim 3, wherein said feedback element is responsive

2   to a load on said frequency measurement element.

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4   6.   A system as in claim 3, wherein said feedback element is responsive

5   to a frequency measure determined by said frequency measurement element.

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7   7.   A method, including steps for sampling a set of packets at a network

8   interface of a switch, said steps for sampling including steps for adaptively altering a

9   fraction of said packets for selection.

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11   8.   A method as in claim 7, wherein said steps for adaptively altering a

12   fraction of said packets for selection include steps for

13   maintaining a queue of selected packets;

14   altering said fraction in response to a length of said queue.

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16   9.   A method as in claim 7, wherein said steps for adaptively altering a

17   fraction of said packets for selection include steps for

18   measuring a frequency of packets of a known type within said selected

19   packets;

20   altering said fraction in response to a load imposed by said steps for meas-

21   uring.

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1   10.   A method as in claim 7, wherein said steps for adaptively altering a

2   fraction of said packets for selection include steps for altering said fraction in response to

3   two or more factors responsive to said selected packets.

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5   11.   A method as in claim 7, including steps for determining a frequency

6   of packets of a known type within said selected packets.

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8   12.   A method as in claim 11, including steps for determining an error

9   range for said measured frequency.

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11   13.   A method as in claim 11, including steps for

12   setting a control parameter;

13   sampling said received packets in response to said control parameter, to

14   provide a queue of sampled packets;

15   comparing a length of said queue with a threshold;

16   altering said control parameter in response to said threshold.

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18   14.   A method as in claim 13, wherein said control parameter is a fraction

19   of said received packets to sample for said queue.

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21   15.   A method as in claim 13, wherein said threshold includes at least one

22   of: a lower bound for said length, an upper bound for said length.

16. A method as in claim 13, wherein said threshold includes a lower bound for said length and said steps for altering said control parameter operate to lengthen said queue in response to said steps for comparing.

17. A method as in claim 13, wherein

said control parameter is a fraction of said received packets to sample for said queue;

said threshold includes a lower bound for said length; and

said steps for altering said control parameter decrease said control parameter in response to said steps for comparing.

18. A method as in claim 13, wherein said threshold includes an upper bound for said length and said steps for altering said control parameter operate to shorten said queue in response to said steps for comparing.

19. A method as in claim 13, wherein

said control parameter is a fraction of said received packets to sample for said queue;

said threshold includes an upper bound for said length; and

said steps for altering said control parameter increase said control parameter in response to said steps for comparing.

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2   20.   A method as in claim 13, wherein said steps for altering said control

3 parameter operate to maintain said control parameter constant for at least a selected num-

4 ber of sampled packets.

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6   21.   A method as in claim 13, wherein said steps for sampling do not

7 produce skew.

add a1   add b1

add f3